Non-ophthalmic parameters and the presence of clinically significant macular oedema

Knudsen, L.L.; Lervang, H.H.; Lundbye-Christensen, Søren; Gorst-Rasmussen, Anders

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The North Jutland County Diabetic Retinopathy Study (NCDRS) Non-ophthalmic parameters and the association to clinically significant macular oedema

LL Knudsen [1A], HH Lervang [1B], S Lundbye-Christensen [2] and A Gorst-Rasmussen [2]
[A] Ophthalmology, [B] Medical endocrinology, Aalborg Sygehus Syd, [2] Århus University Hospital, Aalborg, Denmark; [2] Department of Mathematical Sciences, Aalborg University, Aalborg, Denmark

Purpose

To explore the influence from non-ophthalmic parameters on the prevalence of clinically significant macular oedema (CSME) in the present diabetic population.

Methods

This cross-sectional study comprised 656 type 1 and 328 type 2 diabetic subjects undergoing diabetic retinopathy screening in the County of North Jutland, Denmark during the period 1st April 2000 to 30th April 2004. The association between CSME and blood-pressure, HbA1c, age onset of diabetes and duration of diabetes was explored using logistic regression analysis. The association to blood-pressure reducing medication, lipid lowering medication, neuropathy and nephropathy was also explored.

Type 1 diabetic subjects were recruited from larger Aalborg, an urban area in the county of North Jutland, and comprised more than 75% of all known type 1 diabetic subjects. Type 2 diabetic subjects were recruited from the entire county of North Jutland and comprised less than 5% of all known type 2 diabetic subjects.

Results

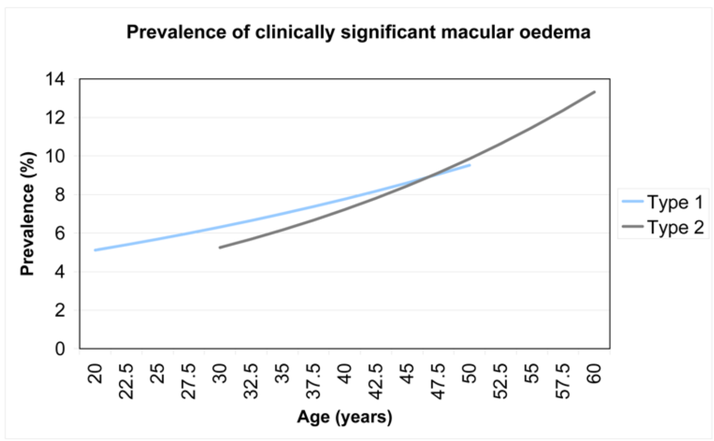

Fig 1
Illustrates the association between prevalence of CSME and age of diabetic subjects, not controlling for other variables.

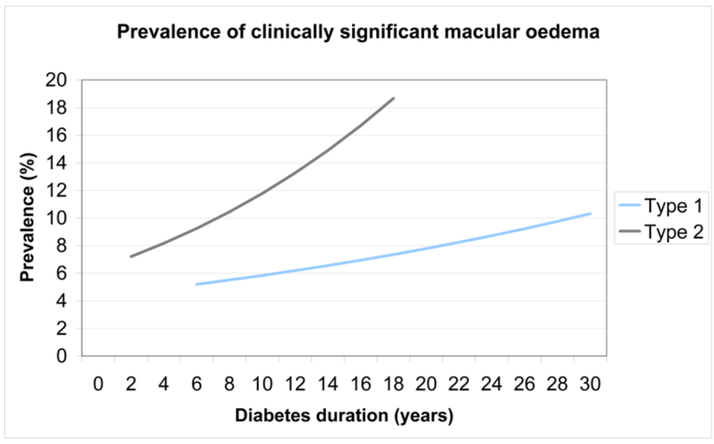

Fig 2
Illustrates the association between prevalence of CSME and duration of diabetes, not controlling for other variables.

Table 1
Odds ratios for CSME.

Odds ratios for clinically significant macular oedema

	Crude OR	Corrected OR†	Corrected OR‡
Type 1			
Age	1.02 * (1.00 ; 1.05)	1.01 (0.98 ; 1.04)	1.01 (0.98 ; 1.04)
Duration of diabetes	1.03 ** (1.01 ; 1.06)	1.03 (1.00 ; 1.06)	1.03 (1.00 ; 1.06)
Bloodpressure			
Diastolic	1.03 (1.00 ; 1.06)	1.03 (1.00 ; 1.06)	1.03 (1.00 ; 1.07)
Systolic	1.01 (1.00 ; 1.03)	1.00 (0.99 ; 1.02)	0.99 (0.97 ; 1.02)
Mid	1.02 (1.00 ; 1.05)	1.02 (0.99 ; 1.05)	1.02 (0.99 ; 1.05)
BMI	0.97 (0.89 ; 1.05)	0.98 (0.90 ; 1.06)	0.96 (0.88 ; 1.05)
Hb1Ac	1.16 (0.93 ; 1.44)	1.15 (0.91 ; 1.44)	1.13 (0.89 ; 1.43)
Type 2			
	Crude OR	Corrected OR†	Corrected OR‡
Age	1.04 * (1.00 ; 1.07)	1.02 (0.99 ; 1.05)	1.01 (0.97 ; 1.04)
Duration of diabetes	1.07 ** (1.03 ; 1.11)	1.06 ** (1.02 ; 1.10)	1.05 * (1.00 ; 1.10)
Bloodpressure			
Diastolic	1.01 (0.97 ; 1.04)	1.01 (0.97 ; 1.04)	0.98 (0.93 ; 1.02)
Systolic	1.02 ** (1.01 ; 1.04)	1.01 (1.00 ; 1.03)	1.02 (1.00 ; 1.05)
Mid	1.03 (1.00 ; 1.05)	1.02 (0.99 ; 1.05)	1.01 (0.98 ; 1.04)
BMI	1.03 (0.98 ; 1.08)	1.04 (0.99 ; 1.09)	1.04 (0.98 ; 1.09)
Hb1Ac	1.31 ** (1.07 ; 1.60)	1.29 * (1.05 ; 1.60)	1.26 * (1.01 ; 1.58)

† Corrected for age and duration of diabetes.
‡ Corrected for all other variables.
* Significant on a 0.05 level.
** Significant on a 0.01 level.

Table 2
Distribution of non-ophthalmic parameters.

Distribution of non-ophthalmic parameters

	Type 1				Type 2			
	Median	Interquartile range	Min	Max	Median	Interquartile range	Min	Max
Age at entry	37.3	19.0	17.0	79.0	58.1	15.0	18.0	83.0
Duration of diabetes	17.6	16.0	1.0	58.0	8.0	11.0	0.0	48.0
Bloodpressure								
Systolic	130.0	20.0	75.0	220.0	140.0	25.0	100.0	205.0
Diastolic	80.0	15.0	50.0	110.0	80.0	15.0	55.0	110.0
Mid	96.7	14.0	58.3	140.0	101.0	13.3	73.3	136.3
HbA1c	8.3	1.6	5.1	13.9	8.1	2.3	4.8	15.2
Body Mass Index	24.1	4.5	13.7	41.3	29.7	8.3	14.2	58.8

Table 3
Odds ration for CSME.

Odds ratios for clinically significant macular oedema

	Crude OR	Corrected OR†	Corrected OR‡
Type 1			
Bloodpressure lowering medication	2.03 ** (1.13 ; 3.64)	1.60 (0.85 ; 3.01)	1.34 (0.70 ; 2.56)
Lipide lowering medication	0.26 (0.04 ; 1.90)	0.15 (0.02 ; 1.14)	0.18 (0.02 ; 1.40)
Neuropathy	0.82 (0.28 ; 2.35)	0.42 (0.14 ; 1.34)	0.39 (0.12 ; 1.24)
Nephropathy			
Mikro	2.24 * (1.02 ; 4.92)	1.95 (0.61 ; 4.09)	1.93 (0.83 ; 4.50)
Makro	1.89 (0.63 ; 5.69)	1.48 (0.47 ; 4.66)	1.26 (0.37 ; 4.28)
Type 2			
	Crude OR	Corrected OR†	Corrected OR‡
Bloodpressure lowering medication	3.19 ** (1.47 ; 6.90)	2.52 * (1.10 ; 5.77)	2.36 (0.94 ; 5.92)
Lipide lowering medication	1.09 (0.53 ; 2.23)	1.02 (0.48 ; 2.16)	0.96 (0.43 ; 2.15)
Neuropathy	3.48 ** (1.72 ; 7.018)	2.53 * (1.20 ; 5.323)	2.26 * (1.01 ; 5.045)
Nephropathy			
Mikro	1.59 (0.61 ; 4.09)	1.36 (0.52 ; 3.58)	1.06 (0.37 ; 3.01)
Makro	7.50 ** (2.90 ; 19.38)	6.58 ** (2.42 ; 17.89)	5.18 ** (1.71 ; 15.68)

† Corrected for age and duration of diabetes.
‡ Corrected for age, duration of diabetes, bloodpressure, BMI and Hb1Ac.
* Significant on a 0.05 level.
** Significant on a 0.01 level.

Conclusions

1. The prevalence of CSME was not influenced from any non-ophthalmic parameters among type 1 diabetic subjects.
2. Among type 2 diabetic subjects the prevalence of CSME was influenced from:
   a. Duration of diabetes
   b. HbA1c
   c. Neuropathy
   d. Nephropathy

AALBORG HOSPITAL
Aarhus University Hospital